

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM

I B. Tech II Semester Supplementary Examinations, Dec 2025/Jan 2026

**BASIC ELECTRICAL & ELECTRONICS ENGINEERING**

(Common to CSE, CSE- Allied Branches)

**Time: 3 hours****Max. Marks: 70***Question paper consists of Part A, Part B.**Part A is compulsory, Answer all questions.**In Part B, Answer any one question from each unit.*

\*\*\*\*\*

**PART-A****(10 Marks)**

- 1 a) Define electrical power. [1]
- b) What is power factor? [1]
- c) Mention any one application of induction motor. [1]
- d) What is the principle of MI instrument? [1]
- e) What is electric shock? [1]
- f) List applications of Zener diode. [1]
- g) Draw symbols of PNP and NPN transistors. [1]
- h) Define amplifier. [1]
- i) List blocks of electronic instrumentation system. [1]
- j) Write Excess-3 code for  $(1001)_2$ . [1]

**PART-B****(60 Marks)****Unit-1**

- 2 a) Explain Kirchhoff's laws with suitable examples [3]
- b) Explain average value, RMS value and form factor of AC quantity. [7]

(OR)

- 3 a) Derive the expression for RMS value of a sinusoidal quantity [5]
- b) A pure resistive circuit is connected to 230 V, 50 Hz AC supply. [5]  
Calculate current and power consumed

**Unit-2**

- 4 a) Explain the construction and working of a single-phase transformer with neat sketch. [5]
- b) Derive the balancing condition of Wheatstone bridge. [5]

(OR)

- 5 a) Explain the principle and working of MI Attraction Type instrument [5]
- b) Describe the construction and operation of a DC motor [5]

**Unit-3**

- 6 a) Explain wind power generation system [5]
- b) Explain working of fuse and its advantages and disadvantages [5]

(OR)

- 7 a) Explain two-part electricity tariff. [5]
- b) Explain earthing and its types. [5]

**Unit-4**

- 8 a) Explain V-I characteristics of PN junction diode. [5]
- b) Explain Avalanche breakdown and Zener breakdown. [5]

(OR)

- 9 a) Explain the working of Zener diode with characteristics [5]
- b) Explain CB configuration of BJT with input and output characteristics [5]

**Unit-5**

- 10 a) Explain working of Full wave bridge rectifier [5]
- b) Explain block diagram of electronic instrumentation system [5]

(OR)

- 11 a) Explain RC coupled CE amplifier with neat diagram. [5]  
b) Explain block diagram of public address system. [5]

**Unit-6**

- 12 a) Construct truth table and logic diagram of Full Adder [5]  
b) Add the following binary numbers: [5]  
(i)  $1011+1110$  and  
(ii)  $101010+111011$ .

(OR)

- 13 a) Explain JK flipflop along with its truth table [5]  
b) Explain logic gates and universal gates [5]

\*\*\*\*\*